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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,468	08/20/2001	Christopher S. MacLellan	EMC-01-018	5620

7590 03/23/2005

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EXAMINER
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TABONE JR, JOHN J

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**APR 01 2005**

**Technology Center 2100**

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/933,468	MACLELLAN, CHRISTOPHER S.	
	<b>Examiner</b>	<b>Art Unit</b>	
	John J. Tabone, Jr.	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **FINAL DETAILED ACTION**

1. Claims 1-24 remain pending in the application. The Applicant states that claims 1, 3-6, 9-11, 13 and 21-23 have been amended. However, the Examiner would like to point out that claims 9 and 21 have not been amended and shows "previously presented".
2. The objections to claims 5 and 6 and rejections of claims 1, 3-6, 10, 13 and 22 under 35 U.S.C. 112 are withdrawn in response to Applicant's amendment. However, the objection and rejection under 35 U.S.C. 112 to claims 9 and 21 is maintained because these claims were not amended, but state "previously presented".

### ***Response to Arguments***

3. Applicant's arguments concerning claims 1-24 filed 11/16/2004 have been fully considered but they are not persuasive.

#### **As per arguments for claims 1, 10, 13 and 22:**

The argument the Applicant presents for claims 1, 10, 13 and 22 similar in scope and therefore will be incorporated together in the following arguments.

The Applicant states on page 13 "There is no motivation in Irrinki for the addition of Lattimore's bus interface unit or CPU to Irrinki's multiplexer 250, nor is there motivation for the signals from the external pins to be "controlled" during normal operation". The Applicant also states "... the combination suggested by the examiner is improper as not being supported by any motivation to combine in either reference...".

The Examiner asserts that it is not necessary that the references actually suggest, expressly or in so many words, the changes or improvements that applicant has made. The test for combining references is what the references as a whole would have suggested to one of ordinary skill in the art. *In re Sheckler*, 168 USPQ 716 (CCPA 1971); *In re McLaughlin* 170 USPQ 209 (CCPA 1971); *In re Young* 159 USPQ 725 (CCPA 1968).

The Applicant states on page 14 "Irrinki does not teach a first logic section, a second logic section and a third logic section". The Applicant also states "If the examiner believes that the block 130 corresponds to the second logic section, then Irrinki also does not teach a third logic section that selectively couples the first logic section or the second logic section to the SUT based upon respective assertion states of two control signals, as recited in the claim". The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to relocate the multiplexer 250 and corrected address multiplexer 252 into a third logic section, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70 (CPA 1950).

The Applicant states on page 14 "Irrinki does not teach two control signals". However, the Examiner would like to point out that Irrinki does teach two control signals with reference to the Office Action of record paragraph 7: "Irrinki also teaches an address multiplexer 250 (third logic section) that selects between address 132 from the external pins and BIST address 232 (based on BIST select 124, *this is the first control signal*) (transmitted from the first logic section), and conveys an uncorrected address

116 to corrected address multiplexer 252 (third logic section). Irrinki further discloses multiplexer 252 also receives corrected address 114 from BISR unit 110, along with corrected address select 112 as the control signal (one of the two control signals that is external to the first, second and third logic sections and the SUT, *this is the second control signal*) which outputs the array address 242 to memory array 140 (SUT). (Col. 5, lines 1-10)".

As per specific arguments concerning the plurality of the second and third logic sections in reference to claims 10 and 22, the Applicant states on page 15 "Irrinki does not teach a plurality of a second logic section and a third logic section". The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to duplicate Irrinki's control block 130 (second logic section) and multiplexer 250 and multiplexer 252 (third logic section), since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 (7<sup>th</sup> Cir. 1977).

It is the Examiner's conclusion that independent claims 1, 10, 13 and 22 are not patentably distinct or non-obvious over the prior arts of record namely, Irrinki et al. (US-5987632) in view of Lattimore et al. (US-6021512). Therefore, the rejection is maintained. Based on their dependency on claims 1, 10, 13 and 22, claims 2-9, 11-12, 14-21 and 23 and 24, respectively, stand rejected.

***Claim Objections***

4. Claims 9 and 21 are objected to because of the following informalities: This claim is unclear to the Examiner. It is not clear how the second logic section may be used in causing the memory to store an erroneous value. Further explanation and appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 9 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claims 9 and 21:**

The use of the phrase “may be” in this claim is non-functional language and, therefore, renders the claim indefinite. The Examiner will examine this claim with “may” removed from the claim language to read “the second logic section transmits...”.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irrinki et al. (US-5987632), hereinafter Irrinki, in view of Lattimore et al. (US-6021512), hereinafter Lattimore.

Claims 1 and 13:

Irrinki teaches a memory storage device 100 which includes a built-in self test (BIST) unit 120 (first logic section), which cycles memory array 140 (SUT) through various test patterns (test related signals), and a control block 130 (second logic section). Irrinki discloses control block 130 transmits various inputs to memory storage device 140: address 132, write enable 134, and data in signal 136 (other signals during normal mode). (Col. 3, lines 40-44, 59-60, Fig. 1). Irrinki also teaches an address multiplexer 250 (third logic section) that selects between address 132 from the external pins and BIST address 232 (based on BIST select 124) (transmitted from the first logic section), and conveys an uncorrected address 116 to corrected address multiplexer 252 (third logic section). Irrinki further discloses multiplexer 252 also receives corrected address 114 from BISR unit 110, along with corrected address select 112 as the control signal (one of the control signals that is external to the first, second and third logic sections and the SUT) which outputs the array address 242 to memory array 140

(SUT). (Col. 5, lines 1-10). Irrinki does not explicitly teach that multiplexer 250 and 252 selectively couples the first the BIST unit 120 (first logic section) and control block 130 (second logic section). However, Irrinki does teach the address multiplexer 250 (third logic section) selects between address 132 from the external pins and BIST address 232 (based on BIST select 124) (transmitted from the first logic section). Lattimore teaches a Bus Interface Unit (BIU) 401 which is coupled to an External Address bus and an External Data bus (external pins) and is also coupled to a CPU 404 which in turn is coupled to multiplexer 410, 412, and 414 (plurality of third logic sections) which in turn is coupled to sub-array 416, 418, and 420 (plurality of system-under-test, SUT). (Col. 5, lines 45-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Irrinki's control block 130 (second logic section) to couple Lattimore's Bus Interface Unit (BIU) 401 and CPU 404 to Irrinki's multiplexer 250. The artisan would have been motivated to do so because this would enable Irrinki to exercise control of the signal coming from the external pins during normal mode. The artisan also, would have been motivated to do so because Irrinki would now have the ability to interface to multiple I/O devices. (See Lattimore, Fig. 7)

Claims 10 and 22:

The motivation to modify Irrinki's control block 130 (second logic section) to couple Lattimore's Bus Interface Unit (BIU) 401 and CPU 404 to Irrinki's multiplexer 250 is per the rejection of claims 1 and 13 above. Irrinki does not explicitly teach a plurality of control blocks 130 (plurality of second logic sections). However, Lattimore teaches the Bus Interface Unit (BIU) 401 the CPU 404 (Irrinki's control block 130 (second logic



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section)) is coupled to multiplexer 410, 412, and 414 (plurality of third logic sections) which in turn is coupled to sub-array 416, 418, and 420 (plurality of systems-under-test, SUT). (Col. 5, lines 45-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Irrinki's control block 130 (second logic section) to couple multiple occurrences of Lattimore's Bus Interface Unit (BIU) 401 and CPU 404 to multiple occurrences of Irrinki's multiplexer 250 and 252 (plurality of control blocks 130 (plurality of second logic sections)). The artisan would have been motivated to do so because this would enable Irrinki to exercise control of the a plurality signal coming from the external pins during normal mode over a plurality of systems-under-test.

Claims 2 and 14:

Irrinki teaches a memory storage device 100 which includes a built-in self test (BIST) unit 120 (first logic section), which cycles memory array 140 (SUT) through various test patterns (test input signals). (Col. 3, lines 40-44).

Claims 3 and 15:

Irrinki teaches data in multiplexer 256 (second logic section) selects between data in signal 136 from the external pins and BIST data in signal 236 (based on BIST select 124), (indication signal) and conveys array data in bus 246 to memory array 246. (Col. 5, lines 1-10).

Claims 4 and 16:

Lattimore suggests an I/O adapter 718 (I/O controller), which is connected to the system bus, may be a small computer system interface ("SCSI") adapter that communicates with a disk storage device 720. (Col. 11, lines 25-35).

Claims 5 and 17:

Irrinki suggests the CPU 404 receives information (the indication) from the BIU 401 (second logic section) to access the memory arrays 416-n+1. (Col. 9, lines 61-64).

Claims 6 and 18:

Irrinki teaches an address multiplexer 250 selects between address 132 from the external pins and BIST address 232 (based on BIST select 124) (assertion of one of the two control signals). (Col. 5, lines 3-6).

Claims 7 and 19:

Irrinki teaches that BIST unit 120 (first logic section) includes a comparator 240 that compares the values on BIST data in signal 236 (expected test outputs) and data out signal 138 (test outputs), asserting error signal 248 if a mismatch is detected (determine the results of the testing).

Claims 8 and 20:

Irrinki teaches that when the BIST select signal 124 and Correct address select signal 112 is asserted (both control signals are asserted) the BIST address 232 (from first logic section) is presented on the memory array 140 (SUT) over array address 242. Irrinki further suggests that when the BIST select signal 124 is unasserted (one of the control signals unasserted) the normal signals are presented to the memory array 140

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(SUT) from the control block 130 multiplexers 250, 254 and 256 (second logic section).

(Col. 5, lines 1-19, 50-62).

Claims 9 and 21:

Irrinki teaches a memory storage device 100 which includes a built-in self test (BIST) unit 120 (first logic section), which cycles memory array 140 (SUT comprises a memory) through various test patterns (test related signals), and a control block 130 (second logic section). Irrinki further suggests that when the BIST select signal 124 is unasserted (one of the control signals unasserted) the normal signals are presented to the memory array 140 (SUT) from the control block 130 multiplexers 250, 254 and 256 (second logic section store an erroneous value). (Col. 5, lines 50-62).

Claims 11 and 23:

Irrinki teaches a method for testing digital electronic memory devices (ASIC). Irrinki also teaches signals 132, 134 and 136 are supplied via external pins. (Col. 1, lines 9-11, Col. 5, lines 4-19).

Claims 12 and 24:

Irrinki teaches that BIST unit 110 (first logic section) is simply a state machine that is programmed to cycle through various test patterns. (Col. 5, lines 28-30).

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

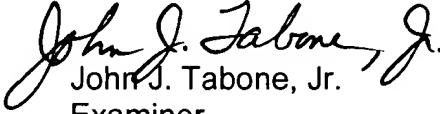
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

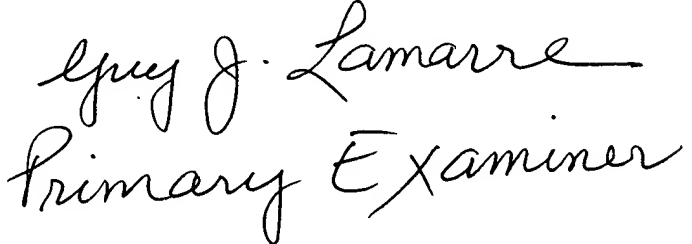
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Tabone, Jr. whose telephone number is (571) 272-3827. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
John J. Tabone, Jr.  
Examiner  
Art Unit 2133

  
Primary Examiner

PK2

TC2100

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